

Oversight Issues

1. Has there been a property transfer since the permit was issued? (Yes/No)

***If yes...Was the new owner told about the monitoring requirement? (Y/N)**

In other words, is the current owner of the parcel, subdivision, or conservation tract different from the owner at the time the original permit was issued? If yes, has the new owner been told about the monitoring requirement, either by the County or by the original applicant?

Staff tried to gather this information so they could evaluate whether more efforts or process improvements were needed to ensure that information was passed on to subsequent property owners.

Applicant Cooperation

1. Did the property owner cooperate when contacted? (Yes/No)

2. Is the current owner the same as the occupant? (Yes/No)

3. Did the new owners/occupant know about the monitoring requirement? (Yes/No)

Each question is clear.

Similar to the Oversight Issues above, staff is trying to establish if new owners or tenants are being told about the permit responsibilities they are assuming when they buy or occupy the property.

Staff is also looking to see if there is a correlation between mitigation success, the long-term involvement of the permit holder, and ownership changes. (Are builder-owner more likely to implement their mitigations plans more successfully?)

Proper Plan Implementation

1. Has the applicant provided proof of proper plan implementation? (Yes/No)

***If yes...Was it by: Invoice ____ "As Built" Letter ____ Monitoring Report ____**

2. Were the required species planted or were there species substitutions?

Planted as required ____ Substitutions were made with approval ____

Don't know ____ Substitutions were made without prior approval ____

1. Has the applicant provided proof that their mitigation plans were properly implemented?

To do this staff looked for invoices for the plants and work completed, an "As Built" letter or plan, or monitoring reports. In some cases, the only indication found in the file is a letter from Clark County authorizing release of the performance bond. The mitigation plans associated with such cases were considered to have been properly implemented.

2. Were there plant substitutions? Did we OK substitutions?

Plant species substitutions were reviewed to see if in-field adjustments to mitigation plans affected the likelihood that a plan would succeed. Mitigation plans typically list several tree, shrub, and/or herbaceous plant species that are required for planting. Staff looked for evidence that all the plant species listed in the mitigation plan were planted and if not, were some additional plant species noticeable in the mitigation area that were obvious substitutions? If substitutions were made, did the applicant gain approval from the county prior to making those substitutions?

Mitigation Elements

The intent of this section is to:

- a. Identify the major design and maintenance elements either proposed in the approved mitigation plan or required by permit conditions;*
- b. Determine whether or not those elements or any others that were not required have been implemented; and,*
- c. Determine if the required elements or any other listed elements were, or would have been; appropriate to ensure success of the mitigation.*

The effectiveness of each element that was been implemented was rated on a scale of 1 to 5 (see Functional Ratings below) and space was provided for a brief comment to provide the user's reasoning for the rating or to identify specific issues.

Each element listed in the table on the data form and criteria for the functional ratings are discussed further below.

Note: The Mitigation Evaluation Data Sheet was created as a spread sheet. For this section, the columns from left to right are: Mitigation Element; Completed?; Required?; Should it have been?; How well is it working?; and Functional Rating. Each mitigation element may, or may not have an answer to each question.

Major Mitigation Elements Listed on the Form

The elements listed on the form were selected because they are the most common elements of either habitat or wetland mitigation plans (or both) approved in the past. Table 1 below describes each element.

Table 1. Mitigation Elements

Element	Description
Signage	Signs or placards placed at intervals along the wetland buffer or habitat boundary stating that the area is to be preserved or protected.
Irrigation	Above-ground or below-ground, temporary or permanent, drip or sprinkler, any sign that plants were watered during the dry season
Snag Presence	Intentionally erected snags that are generally greater than 20" DBH and 20' tall
Access Management	Restricted entry into a critical area by constructing a physical barrier
Hydrologic Monitoring	To periodically test water levels using observed surface inundation, pisometers, test pits, etc.
Maintenance Plan	Guidelines for how the mitigation will be maintained through the monitoring period, including replacement or substitution plantings, weed control, protection of plants against herbivory, etc.
Plant Protection	Tree tubes, small fences, anti-girdling devices to protect plantings from herbivory or other animal damage
Nest Boxes	Artificially placed bird nest boxes or bat roosting boxes
LWD Placement	Intentionally placed " <u>L</u> arge <u>W</u> oody <u>D</u> ebris" laid on the ground, can consist of single tree boles, root wads, or brush piles
Physical Demarcation	A visible marker at the edge of the wetland buffer or habitat boundary such as a fence or signs on posts
Invasive Control	Removal and continued control of invasive plant species such as Himalayan blackberry or reed canarygrass that might threaten survival of mitigation plantings
Plantings	Maintenance of required tree, shrub seedlings, or herbaceous plantings as part of the mitigation plan (plant species present and overall performances of plantings are recorded in subsequent sections of the data form).

PLEASE NOTE: At this point, there are two keys on the right side of the Mitigation Evaluation Sheet. They are the "Function Key" and the "Coverage Class" key.

Functional Ratings Key

Each element that was either required in the permit approval or observed to be present on the site was rated using the 5-point scale shown in Table 2 below.

Table 2. Functional Rating Scale

Score	Rating	Description
5	Excellent	Element is clearly functioning as intended with no expectation for future issues.
4	Good	Element appears to be functioning well enough for the element to succeed, but there are some problems or a possibility for future issues.
3	Fair	Element has been completed and appears to be functioning at an acceptable level, but problems exist that may jeopardize the success of the mitigation strategy.
2	Poor	Element appears to have been implemented and is functioning at a minimal level, but significant problems exist that threaten the success of the mitigation strategy.
1	Failed	Element was either not implemented, is unrecognizable, or is clearly not functioning as intended.

Coverage Class Key

The overall extent or coverage of vegetation is estimated using a canopy-coverage method (Daubenmire, 1959) applied to the mature height class (strata; i.e. tree, shrub, groundcover) or species of interest. This method is to be used where estimates of coverage are needed.

The aerial spread and density of foliage of each species, group of species, or strata is estimated using broad coverage classes. The Daubenmire coverage classes are in Table 3.

Table 3. Daubenmire Coverage Classes

Percentage of Aerial Cover	Coverage Class
0 – 5%	1
5 – 25%	2
25 – 50%	3
50 – 75%	4
75 – 95%	5
95 – 100%	6

This class scale is used to answer the following questions:

- Percent Coverage?
- Dominant?— Dominance for this purpose is generally, coverage greater than 20% by a single plant species.

Plants

“Zone” is an arbitrary identifier used to identify separate or distinct mitigation areas within a single plan. For example, a wetland biologist could have plant set “U” for required Upland area plantings, “B” for Buffer plantings, “E” for enhancement area plantings, and “C” for newly Created wetlands.

“Species Code” is a short-hand four digit code which uses the first two letters of the full scientific name. For example, PSME would represent Pseudotsuga Menziesii which is the scientific name for a Douglas Fir.

“Planted” - Were the required species planted or not.

“Dominant?” - Using your best professional judgment can you to determine what species were dominant on the site? (See above)

While not clearly labeled, plant data was collected in four columns. Zone, Species Code, Planted, and Dominant. This data is repeated three times across the sheet to give staff enough room to handle complex planting plans that required many plant species.

It is hoped that future analysis can help staff tailor mitigation plans to include plants which are more likely to succeed.

Mitigation Siting

1. Was the mitigation installed as prescribed? (Yes*/No**)

***If Yes, was the site of the mitigation appropriate? (Yes/No)**

****If not, was the planted site more appropriate? (Yes/No)**

Has the plan been installed as approved in the mitigation plan? If yes, was the approved plan appropriate for the desired mitigation? If adjustments made in the field to the approved mitigation plan, was the new site more appropriated than that approved in the original plan?

This section gets to the question of whether mitigation is being approved in the right location. It also answers whether mitigation plans are being installed as shown in the approved plan.

The supplemental question allows staff to analyze changes that are made in the field to accommodate real-time, on the ground situations. By doing this, it allows staff to understand how often plans are modified and to recognize appropriate changes.

Maintenance Adequacy

1. What is the level of threat from invasive species in the adjacent area? (High/Medium/Low)
2. How much of the area is covered with invasive species? (coverage class)

The following scale was used:

High Invasive species are present on the site at greater than 10% coverage or in areas immediately adjacent are prolific and aggressive, with little or no separation between them and the mitigation site.

Medium Invasive species are present on the site but are present at less than 10% coverage or are present in areas immediately adjacent, but do not dominate the plant community and/or may be separated or physically isolated from the mitigation site.

Low Little to no invasive species on or adjacent to the site with a low likelihood that these species will dominate the mitigation site or mitigation site is physically isolated from invasion pathways by roads, houses, etc.

Staff rated adjacent sites as having a High, Medium, or Low threat level to the mitigation site. Staff then further indicated what amount of the site itself which had invasive species coverage.

This information was gathered to help staff consider whether the mitigation site fully considered its context. For example, what percentage of the site has canopy coverage of invasive species such as Himalayan blackberry, reed canarygrass, or English ivy?

Analysis of this data will help us determine what mitigation elements should be used in conjunction to ensure success based on levels of invasive species threats.

Success

1. Have the plantings been out-competed by non-natives? (Yes/No)
2. Have the plantings been out-competed by local natives? (Yes/No)
3. What is the approximate average height of the mitigation plantings by species?
4. Which canopy layers are present on the site?
5. Was mitigation formulated to create multi-layered canopy? (Yes/No)
6. Are there visible causes for disturbance? (Disease/Human/Animal)
7. Is the site functional and reflect the goal of the mitigation plan? (Yes/No)
8. Does it meet the performance standards prescribed in the conditions, per the mitigation plan report? (Yes/No)
9. Can the mitigation strategy be considered successful? (Yes/No)

Competition (Questions 1 and 2)

Non-native competition *Is it obvious that the mitigation plantings are being or have been out-competed or overgrown by non-native plant species such as Himalayan blackberry or reed canarygrass?*

Native competition *Is it obvious that the mitigation plantings are being or have been out-competed or overgrown by local native plant species that are regenerating or spreading naturally such as red alder, wild roses, or some other native tree, shrub, or herbaceous plant species that is threatening the survival of mitigation plantings?*

Approximate Height of Mitigation Plantings (Question 3)

Estimates were made for the average height in the tree and shrub strata and select the appropriate range listed on the form.

This data will allow staff to analyze the connection between successful mitigation sites and the height/size/age of plantings. It will also allow for long term trending data analysis as mitigation sites mature.

Canopy Layers (Question 4)

Tree *Estimate the canopy coverage of the trees present within the mitigation site and note if the strata is dominated by natives (left column) and/or invasive species (right column).*

Shrub *Estimate the canopy coverage of the shrubs present within the mitigation site and note if the strata is dominated by natives (left column) and/or invasive species (right column).*

Herbaceous Estimate the coverage of the herb species present within the mitigation site and note if the strata is dominated by natives (left column) and/or invasive species (right column).

This data will allow staff to analyze whether there are natives or non-natives on site, the canopy cover class for each layer, and whether there are invasive species dominating any of the canopy layers. All geared towards immediate analysis and long term trending data analysis as mitigation sites mature.

Multi-layered Canopy (Question 5)

Did the mitigation plan propose the planting of trees and/or shrubs to create a stable plant community with multiple canopy layers (i.e. planting trees with shrubs at a sufficient density to create a closed canopy, or under-planting of shrubs and trees in an existing forest)?

Disturbance Causes (Question 6)

Disease Look for simple indicators such as lesions, fungi or discolored, blemished, or malformed bark or leaves.

Animal Impacts Look for obvious signs of deer browse or rubs, damage from small mammals (voles, etc.), livestock grazing, etc.

Human Impacts Litter, yard debris, pet waste, clearing, trails, wheel ruts, camp sites, play areas, deer stands, etc.

This data will allow for staff to analyze if there are obvious factors that contribute to mitigation failure. Staff will then be able to better formulate mitigation plans which can avoid those disturbances.

Functioning/Meets Goals (Question 7)

Considering the design of the mitigation plan and how well each of the requirements were implemented and how those requirements are functioning now, does the present condition of the mitigation site as a whole reflect the original goals or intent of the mitigation plan?

This data allows staff to analyze past permitting practices. For example, are staff biologists approving viable mitigation plans?

Staff will also be able to review other contributing factors to see how they affect successful and plan implementation. For example, staff will be able to compare implementation rates, success rates, use of long-term maintenance, physical demarcation, access management, etc...

Performance Standards (Question 8)

Compare the current condition of the mitigation site to the performance standards prescribed in the conditions and/or mitigation plan. Does the condition of the mitigation site meet those requirements (i.e. survival rate, nest boxes or LWD installed, signs present, weeds controlled, etc.)?

Mitigation Success/Failure Criteria (Final Question)

A mitigation strategy may be considered successful if the plan is implemented as proposed and there is a reasonable likelihood that the enhancements will persist and function properly within a 50-year time period.

Additional Comments

If necessary, elaborate on the data collected. Add any comments that would be helpful to others interpreting the information recorded on the form.

Analysis

Describe any other observed threats to mitigation function or unique site details. Explain any conclusions reached from site observations or data recorded on the form. If possible, also include general observations of overall critical area function pre and post-development.